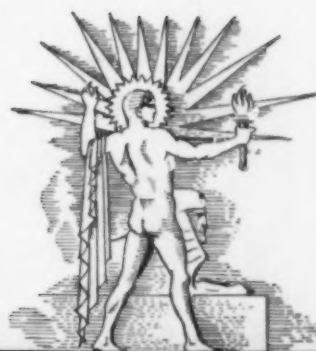


SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •



FEBRUARY 20, 1932

A Birthday Candle

See Page 116

A

SCIENCE SERVICE PUBLICATION

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Science

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The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

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DO YOU KNOW THAT

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Anchors used by early mariners were sometimes inscribed with the names of a protecting divinity.

Men have been making glass for about 5,000 years, but it is only in the past 25 years that machinery has been adapted to this ancient craft.

Eight George Washington Memorial Forests have already been established, totaling 401 acres and 276,000 trees.

Nature lovers in Massachusetts say that "signs of spring" have failed this year, for prairie horned larks and wild flowers arrived in January.

Nutrition experts say that sweets made with molasses are rich in iron and calcium.

In ancient Asia Minor, salves and ointments frequently contained honey and oil-of-beeswax as healing ingredients.

Weasels kill animals ten or twelve times their own size.

Either consciously or unconsciously, men and women tend to select mates whose intelligence is about on their own level, says a psychologist at the University of California.

The well known "fairy stones," which resemble crosses in shape, are twin crystals of the mineral staurolite.

Farmers in the Imperial Valley of California have had to fight off armies of hungry wild ducks that invaded their fields of grain and vegetables.

For years, Hopi Indians have persistently grown Hopi lima beans, despite all efforts to interest the Indians in commercial varieties; now, a California farm expert has taken the Hopi beans and developed a fine market variety which is expected to bring two million dollars a year into California's coffers.

A new tester to determine the strength of fruit jellies and similar products can make eight to ten measurements per minute.

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Science Service presents over the radio, an address

WAYS OF THE BEAVER PEOPLE

By Vernon Bailey, Veteran Field Naturalist of the U. S. Biological Survey

Friday, February 26, at 3:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

GEOLOGY

New Discoveries of Radium Made in Canadian Northwest

Mining Operations, Checked by Winter Freeze-Up, Will Begin Next Month on Ore Veins Rich in Element

TWO NEW rich radium-bearing ore veins were discovered at Great Bear Lake, in northwest Canada, just before the winter freeze-up stopped further prospecting. Hugh S. Spence, Canadian Department of Mines expert, has revealed at conferences with Washington geologists. As official visitor to the radium strike in Northwest Territories Mr. Spence aided in the discovery of the new bodies of pitchblende ore.

Earlier reports of the rich finds of Gilbert LaBine, discoverer of the original radium ore deposits, were authenticated by Mr. Spence, who stated to Science Service:

"Beyond any question the pitchblende deposits at LaBine Point constitute a very valuable source of radium. At the present value of radium, ore could easily meet the \$400 per ton cost of shipment to the railroad."

More and larger amounts of pitchblende than yet found, containing at present prices, \$6,000 to \$8,000 worth of radium to the ton, may yet remain to be discovered, Mr. Spence predicted. Two of the veins have been traced for distances of 1400 and 2500 feet and all four seem to run together like the fingers of an outspread hand. A still larger and more valuable deposit may lie at the "wrist" somewhere to the northeast of the present workings.

Precious Pitchblende

Another new strike of the precious pitchblende, 12 miles distant from Echo Bay, where the first vein of La Bine's Eldorado Gold Mines, Limited was located, has already been reported on the ground of the rival Northern Aerial Minerals Exploration Company.

Planes were arriving during all the time of his stay at LaBine Point on the Great Bear Lake, Mr. Spence said. These were carrying prospectors on the look-out for further silver deposits. LaBine's number two pitchblende vein interlaced with valuable native silver veins, the best so far discovered in the region, assaying some 9,000 ounces to the ton, had roused the hopes of adventurers.

Only two men are on the ground at

present because of the freeze-up, said Mr. Spence, but mining operations will be started again next month. Fourteen surface pits were being worked at the time of his visit last summer. The ore obtained from these by hand picking averaged 50 per cent. uranium oxide or about one gram of radium to eight tons of ore.

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ARCHAEOLOGY

Mummies in Painted Masks Found in Egyptian Graves

TEN MUMMIES with heads covered by painted masks have been discovered in an Egyptian cemetery, says a report from Alan Rowe, field director of the University of Pennsylvania Museum expedition now excavating at Meydum.

The mummies date from 250 B. C., which places them in the era when the Greek Ptolemies were rulers of Egypt. The masks, beautifully painted, are made of sheets of papyrus and are in-

scribed in Egyptian and Greek. As soon as the papyri can be safely removed, an effort will be made to decipher the inscriptions.

Meydum has been known as a place of royal burials of the great pyramid age. The new excavations show that Meydum was not abandoned around 2500 B. C., as was once thought correct. A cemetery of about 1500 B. C. has been found, as well as the burials of the third century B. C., and also graves even more recent.

Science News Letter, February 20, 1932

PUBLIC HEALTH

Poison Tablets Fatally Mistaken for Aspirin

A MAN recently died at Philadelphia as a result of mistaking bichloride of mercury tablets for aspirin. This fatal accident might not have occurred if the poison tablets had conformed in shape and color to the requirements of the U. S. Pharmacopoeia. E. Fullerton Cook, chairman of the committee on revision of the U. S. Pharmacopoeia, points out in a warning issued to manufacturers, wholesalers and retailers of drugs throughout the country.

The tablets in this case were white and disk-shaped like aspirin tablets. They were marked "poison" in raised letters. This, however, could easily have been overlooked, especially as aspirin tablets also carry a raised lettering. Mr. Cook pointed out. (*Please turn page*)



HUSKS OF MORTALITY

Mummies dating from 250 B.C., the heads of which are wrapped in beautifully painted masks made from sheets of papyrus and inscribed in Egyptian and Greek, which have just been discovered in Meydum, Egypt, by an archaeological expedition of the University of Pennsylvania Museum.

In accordance with the U. S. Pharmacopoeia, bichloride of mercury tablets, also called corrosive mercuric chloride and corrosive sublimate tablets, should be of an angular shape, not flat and circular, or discoid. They should also be colored blue, and should have the word "poison" and the skull and cross bones design distinctly stamped on them. They should be dispensed in securely stoppered glass containers bearing a red label with the word "poison" and a statement indicating that the tablets contain the required amount of cor-

rosive mercuric chloride.

An epidemic-like wave of similar accidents occurred a number of years ago. It was following these accidents that the present safety requirements were incorporated into the U. S. Pharmacopoeia, which is the official standard for drugs in the United States.

Mr. Cook cautioned all distributors of bichloride tablets immediately to check their stock and withdraw from sale every package which offers a white or discoid tablet.

Science News Letter, February 20, 1932

GENERAL SCIENCE

New Technique of Science Education to be Introduced

A NEW TECHNIQUE in science education will be introduced to the school world by Science Service, the institution for the popularization of science, when an experimental series of science addresses recorded phonographically by eminent scientists are demonstrated at the meeting of the National Education Association at Washington.

A novel type of long playing phonograph record, reproducible on any ordinary phonograph, will bring to classes the voices of America's science leaders. The durium record used is so inexpensive that cost will not be a barrier to its wide use as a new teaching tool.

The science classes of American schools will have the opportunity of meeting eminent scientists through the medium of these new phonograph records. Science instruction will be vivified and the work of the teacher will be made more effective.

The Science Service phonograph records will not usurp the place of the teacher. It will be just as though Dr. Millikan and the other six scientists who have been recorded were to visit the teacher's classroom and deliver short talks to the pupils.

Seven of America's leading scientists have cooperated with Science Service in this educational experiment. Dr. Robert A. Millikan, Nobel prize physicist, talks on "The Rise of Physics." Dr. John C. Merriam, president, Carnegie Institution of Washington, tells of "The Record of the Rocks"; Dr. Edwin G. Conklin, Princeton University, talks on "The Mystery of Life"; Dr. L. H. Baekeland, inventor of bakelite, speaks on "Chemistry and Civilization"; Dr.

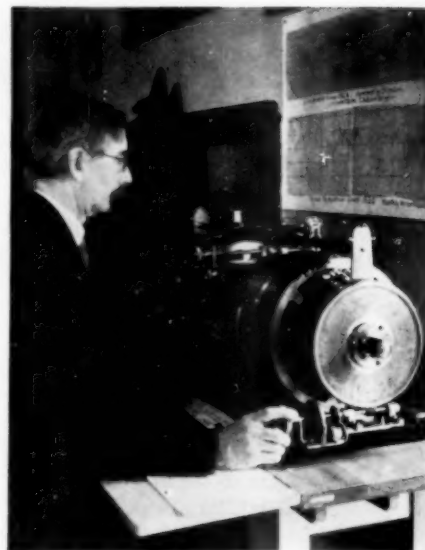
William H. Welch, Johns Hopkins University, talks on "The Fiftieth Anniversary of the Discovery of the Tubercle Bacillus"; Dr. William M. Mann, director, National Zoological Park, talks on "Our Animal Friends"; and Dr. Karl T. Compton, president, Massachusetts Institute of Technology, discusses "Science and Engineering."

With each phonograph record the teacher will be furnished a beautiful gravure process portrait of the speaker for display while the record is played to the class. As Science Service is an endowed educational and scientific institution not operated for profit, the set of seven records and portraits will be made available at the very nominal cost of only \$3 for the set.

Since the Science Service phonograph records can be used at any time at the discretion of the teacher, it is believed that they will be more adaptable to the classroom than radio instruction. Since the Science Service phonograph records are inexpensive, they will prove more widely available than motion pictures. Surveys have shown that most all schools own or have access to phonographs on which the records can be played.

Chemical science made possible the low cost production of the Science Service long playing phonograph records. The durium record used consists of a thin layer of a synthetic resin applied to a piece of pressboard. The strength of this man-made resin allows the sound grooves to be placed very closely together, nearly doubling the time of playing. The durium resin also assures long life and faithful voice reproduction.

Science News Letter, February 20, 1932



THE BRASS BRAIN

This apparatus, technically known as a periodometer, is shown with its inventor, Dr. C. G. Abbot, secretary of the Smithsonian Institution. One of its principal uses will be to find, if possible, a basis for forecasting weather variations long in advance. With the periodometer Dr. Abbot hopes to discover and evaluate the periodicities in a long series of observations, such as the daily variations in the radiation of the sun. It is believed that there is a close relationship between these variations and the changeability of the weather. Dr. Abbot's apparatus operates with greater accuracy and speed than can be obtained from human computation, and special mathematical training is required to make use of it.

CHEMISTRY

Vitamin A Found Kin to Artificial Violet Perfume

VITAMIN A, the food substance necessary to produce normal growth, has just been shown to be closely related to a well-known perfume, artificial violet, by Prof. Paul Karrer, chairman of the Chemical Institute of the University of Zurich, who has proposed a chemical formula for the vitamin.

Ionone, the basic material of all violet perfumes, and one of the most important synthetic products in the art of perfumery, forms the larger part of the molecule of vitamin A in Prof. Karrer's formula. Only beta ionone, however, one of two closely related forms of ionone, is present in the vitamin.

Vitamin A is the vitamin that has recently been obtained by Prof. J. C. Drummond and his associates by breaking in two the substance carotin.

Science News Letter, February 20, 1932

METEOROLOGY

Past Eleven-Year Period Shown As Hottest on Record

Tales of Severe Winters of Long Ago Substantiated By Government Figures Which Reveal Climate Has Changed

STORIES about the severely cold winters of long ago should not be taken "with a grain of salt," and then forgotten. For, in spite of the fact that most of us consider average weather over a period of several years to be one of the most unchangeable phenomena of nature, records of the United States Weather Bureau for the past sixty years prove that the opposite is decidedly true.

Weather is fickle, these yearly average temperature records show, and, to substantiate the often-repeated tales of great cold of distant years, the figures reveal that the past eleven years have been decidedly the greatest "hot spell" the United States has experienced in the history of its scientific, widespread weather recording.

Not Necessarily Permanent

Although the country's weather has definitely changed and the new warmth is continuing into 1932 over the greater part of the United States, there is nothing to indicate that this change will be permanent, authorities at the Weather Bureau say.

This period has been much longer and hotter than any other similar group of warm years, average annual temperatures for the whole country show. Its last year was the hottest year in the history of the Weather Bureau—1931; it

opened with the next hottest—1921; and included a strong contender for third place among the warmest years on record in this country—1925.

"Eight years of the eleven were definitely above normal and three of these were extremely warm," J. B. Kincer of the Weather Bureau summarized for Science Service. As chief of the division of agricultural meteorology, Mr. Kincer keeps the statistics that picture the weather's behavior. "Only two of the eleven years were below normal," he continued, "and these only slightly so. One was just about an average year with a slight tendency toward warmth. The below normal years were 1924 and 1929, while 1926 was the year closest to normal."

Departures above normal were recorded more often and were found to be greatest during the eleven-year hot period in states in the north central part of the country. While the country as a whole was warmer than normal, this portion was more often decidedly the warmest.

It was to be expected that the north central states would often be the most abnormally warm section of the country, Mr. Kincer pointed out, for as the geographical center of the continent they are farthest from the tempering influ-

ence of oceans. Hence this part of the country feels the greatest extremes of cold as well as of heat.

Strangely, some famous winter storms have not left their mark on the average annual temperature records. The great blizzard of 1899, for example, when a temperature of two degrees below zero was registered in northern Florida, occurred in what the records show was not an especially cold year. Temperatures for the greater part of 1899 were high enough to pull up those of the cold period. Although the average temperature records sometimes conceal striking cold spells that have left a deep impression in memory, they present the fairest complete picture of weather during past years.

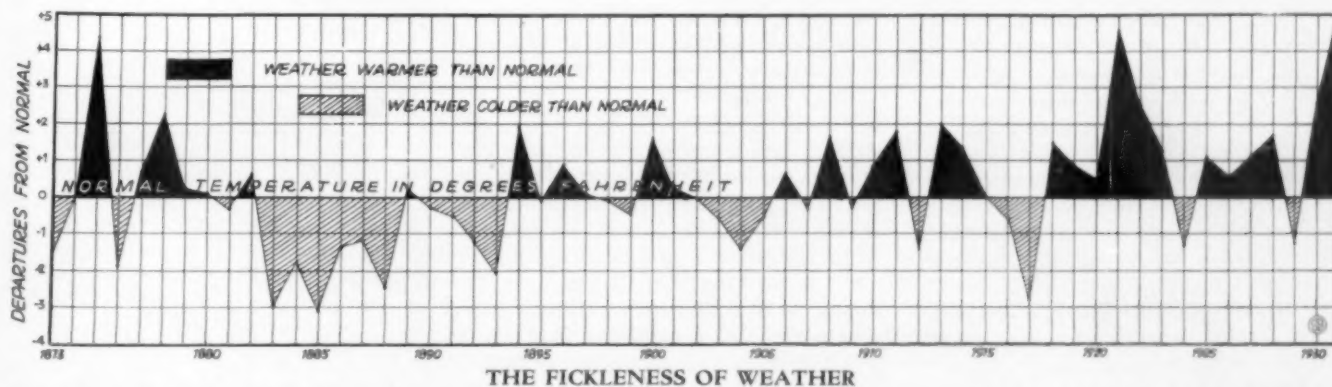
Science News Letter, February 20, 1932

CONSERVATION

Heavy Northern Snows May Promote Duck Breeding

WILD DUCKS, their numbers more than decimated by two summers of drought that have dried up their breeding pools in the North, will have a chance to build up their flocks again during the coming season, if recent heavy snows are followed by further precipitation. Reports to the American Game Association from officials and other observers in the northwestern states and the Canadian prairie provinces are encouraging. The emergency short shooting season last fall helped, too; the U. S. Biological Survey has estimated that the total take in the autumn of 1931 was not more than seven million birds, about a third of the usual number. The survivors go to swell the none-too-large breeding stock.

Science News Letter, February 20, 1932



THE FICKLENESS OF WEATHER

This chart shows how fickle the weather is and graphically points out the past 11 years as the longest, hottest, period of U. S. Weather Bureau record. It is a curve showing the departure from normal of average annual temperatures for Iowa since 1873. The mid-western state was chosen because it has one of the longest complete weather histories and because its weather is generally typical of that of much of the country. Average weather for the country as a whole, however, does not show as great abnormalities as those registered in Iowa. There are not sufficient statistics to prepare a record of this length for the entire country.

ORDNANCE

Uncle Sam's New Iron Horses

While Battle Rages on the Chinese Front, Army Ordnance Engineers Work to Build Up America's Defense Line

By CAROL NEWMAN, JR.

MARS stalks along the crooked streets of Shanghai. Guns roar from Japanese warships, and bombing planes loose sudden death. The ominous echoes of the struggle reach far away to little Geneva, where world powers strive to restore peace.

Engineers of the Army Ordnance Department in Washington also hear these echoes. Invasion of America must always be reckoned with, they believe.

If invasion does come how will America defend herself? As the Allies did, largely with unprotected men—men who went down in battle like reeds before the scythe? And must defense pay the price of the World War: drain of a nation's coffers and depletion of her man power?

Means are being devised in the Ordnance Department to give the American soldier greater protection and effectiveness, and to build up a defense line which will end conflict decisively and prevent needless bloodshed. Ordnance men have been busy, pondering over blue prints and tinkering with engines. Calling on industrial aid, they have constructed during the past few years machines which are swift and devastating, unlike any that were used in the World War.

Tanks that glide easily through mud holes; armored cars that sweep across rough country spouting death on every side; guns that move themselves into battle—these are no longer mere experiments. Mechanization—for that is what such aids to the fighting man are termed—has proved its worth.

The first regular mechanized unit of the U. S. Army is now being assembled at Fort Knox, Kentucky. The equipment taken there is not for the infantry, however, or for the artillery—but for the cavalry! The Army's First Cavalry Regiment will conduct future maneuvers without a horse.

But this innovation does not mean the end of the spectacular rough rider. Horses still have their place in military tactics. They are able to negotiate country impassable for practical purposes to

any type of machine now in use. Thus for some time at least there will be two types of cavalry; one mechanized and one horsed.

The reorganized cavalry regiment will have three lines of attack: armored cars, combat cars, and personnel carriers. These types of machines have all been developed since the World War. In fact, most 1918 equipment is now obsolete.

The armored car, first in line of battle, is 9,000 pounds of steel which moves 60 miles per hour. It is equipped with radio, and .30 and .50 caliber machine guns. Four men ride inside, safe from rifle or smaller machine gun bullets at any range.

Vicious Combat Cars

Corresponding to the tanks of the infantry are the heavier and more vicious combat cars. These machines possess an unusual feature. On roads they run on wheels, making 30 miles an hour. When the time comes to go afield, tracks are substituted for the wheels, enabling the vehicles to negotiate rough terrain at a speed of 20 miles per hour. This convertible type of machine is known as the Christie tank, of which the government now possesses seven. The combat cars carry the same guns and protective steel-work as the armored cars.

The third squadron in the cavalry regiment will be made up of carriers for the fighting men themselves. Six-wheeled vehicles, weighing 3,500 pounds and without armor or attached armament, will transport men wielding machine guns.

To do special scouting work, the army is contemplating the use of light four-wheeled vehicles without body or top. The men who ride in them will be armed with machine guns.

Accessory vehicles, such as repair cars and ammunition carriers, will be attached to the mechanized cavalry regiment. For the present, artillery units will also be made a part of the organization.

All these types of vehicles have been developed. It is now a matter of producing them in sufficient quantities.

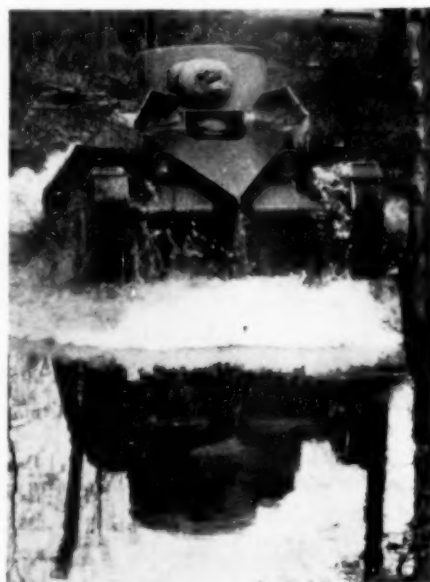
Late advances in mechanization also

include the 75 mm. gun which is self-propelled. Such a weapon is in great contrast to the ordinary gun pulled by a tractor or moved along the road in trucks. The 75 mm. gun is mounted on a caterpillar chassis which allows easy movement over road or rough ground.

Newest among the tanks for service with the infantry is the seven and one-half ton model developed by the Ordnance Department. It is really no more than a light chassis, but the beauty of it is that upon this chassis may be mounted almost any necessary device: 75 mm. or other light gun, cargo or personnel carrier, telephone and radio apparatus, repair or engineering equipment, ammunition or chemical outfits. Its speed is 20 miles per hour.

The new tank is three times as fast as the old six ton model of the regular army. One of them has run more than 2,000 miles across varying terrain without overhauling. Another made the fastest tank trip recorded in the U. S. Army—from Fort Meade, Md., to Gettysburg, Pa., a distance of 72 miles in one day without a breakdown.

The new tank carries two men and a gun firing a one-pound projectile.



WATER DOG

The Christie combat car, which carries the brunt of the mechanical cavalry attack. In rough country and stream beds, the combat car moves on tracks as shown here. Along roads, however, the tracks are removed and the wheels underneath enable the strange machine to travel forty miles per hour.

Thirty-caliber machine gun bullets glance off the new tank like so many pebbles. And it moves through gulley and up bank at 10 to 20 miles per hour.

Where the really heavy fighting is to be done, the new fifteen-ton tank will be in the thick of it. Four men are accommodated, and the gunner, by working a little trigger, can turn loose steel avengers weighing three pounds as well as lead hail from the .50 caliber machine gun. The big tank, which charges along at 20 miles per hour, is a brute for punishment. Its armor weighs five tons and stops machine gun bullets of any size.

How the new mechanized cavalry regiment would function in time of war was sketched briefly by Capt. John K. Christmas, of the Ordnance Department. Capt. Christmas is attached to the automotive section of the Ordnance Department and is regarded as an authority on mechanized warfare.

If an enemy force landed at New York, he said, and began advancing on Washington, the armored cars, moving rapidly, would be sent out to discover its exact movements. What information they gathered would be radioed back to the main force of the army. The armored cars might come upon a hill or some other point occupied by the advance guard of the enemy, and a skirmish would ensue.

Should the armored cars, their machine guns firing on every side, find the opposing forces too great, they would radio for assistance. Then churning up the hillside would come the combat cars which carry the brunt of any mechanized cavalry attack. Once the position was won the individual soldiers would arrive in the light cars and hold the ground. If the sledding were too rough, however, portions of the main infantry and artillery units would be called into play.

When the big battle took place the mechanized cavalry will continue to function; armored cars dashing around the enemy flanks; combat cars or tanks, driving in at a weak spot in the line; personnel machine gunners laying down a raking fire.

The fact that the cavalry should be the first unit to be mechanized appears quite natural in the light of the statement made by General Douglas MacArthur, chief of the Army staff. The mission of the cavalry, he says, to do scouting work and to strike quickly at a vital spot, has not changed throughout the years. But the shock power of a horse is no longer effective in this day of firearms, and the horse, next



THE CAVALRYMAN'S LATEST STEED

First in line of battle is this four and one-half ton steel armored car. It carries four men, machine guns and radio, and attains a speed of sixty miles per hour.

to the dismounted man, is the slowest means of transportation.

Because the new machines can move quickly and strike effectively, they should function as cavalry, Gen. MacArthur states. This assignment is made on the basis of mission to be performed and not on equipment, as was that of the Experimental Mechanized Force. It was then thought that the unit should operate as an individual, self-contained army. Now it is realized that mechanization should supplement the regular army.

Speaking of one part mechanization will play in a fighting force, Gen. MacArthur says: "It is not difficult to visualize a reserve of the future, moving out in column from head to rear—Cavalry (mechanized), units of the Tank Corps, Infantry temporarily embussed, all elements being able to move at a uniform speed without noise."

Experimental Force

To determine the possibilities of mechanization in warfare, a small experimental force was organized at Fort Meade, Maryland, in July, 1928. Armored cars and tanks were included; infantry, engineer and chemical units, anti-aircraft guns and field artillery were motorized. Twelve hundred men were attached to this force and the vehicles totaled about 300. While most of the equipment was shown to be obsolete the normal daily march of the force totaled 75 miles, three to five times what a muscle-propelled force could do. Here the tanks were moved in trucks. In the fall of 1930 the mechanized unit was transferred to Fort Eustis in Virginia.

The General Staff of the army had intended to organize this year a mechanized force equipped with artillery,

airplanes, gas and tanks. It was later decided to incorporate the mechanized force in the First Cavalry Regiment.

Mechanization in warfare, Capt. Christmas pointed out, has come as the inevitable result of the World War. Men sent into battle without protective armor and comparatively ineffective weapons were slaughtered to such an extent that something had to be done to save them. It was then, in 1915, that the English developed the tank as a device to increase fire power and reduce casualties.

The British believe, Capt. Christmas says, that the future of land warfare lies in the realm of mechanization. Up through 1929 they had spent \$60,000,000 for development along this line, at least ten times more than the United States had spent altogether. Just recently 200 new Vickers 11-ton tanks are reported to have been purchased by the British Army. A new Vickers-Armstrong tank, introduced not long ago, is amphibious. On the road the tank travels at 40 miles per hour and it moves through water at six miles per hour. The weight of the tank is 6,000 pounds. English armies are being developed with the idea of mechanizing them completely, and making them better equipped for war.

But mechanization may even put an end to war of such proportions as the last. Only four nations in the world, Great Britain, France, Germany and the United States, are capable of raising mechanized armies with which mere man-armies cannot compare. No other countries can match them in industrial power. And it is conceivable that these four will be able to adjust their differences without resort to bloodshed.

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CHEMISTRY

Vitamin C Derived From Poison Found in Opium

THE PARENT substance of the life-essential, scurvy-preventing vitamin C is none other than the poison narcotine, investigations of Dr. Otto Rygh, his wife, Dr. Aagot Rygh, and Dr. Per Laland of Oslo have shown. Narcotine is one of the alkaloid poisons found in opium and is related to morphine, but in spite of its name does not have any narcotic effect. It is transformed into vitamin C during the ripening of fruits and vegetables.

The isolation of vitamin C and discovery of its parent substance came as a result of studies of the occurrence of the vitamin in various fruits and vegetables such as oranges, lemons, tomatoes, white cabbages and potatoes. The Norwegian scientists found that narcotine was present in the unripe fruits but gradually disappeared as the ripening proceeded and the ripe products contained the vitamin but no narcotine.

Guinea-pigs were then fed on a diet containing narcotine and on a diet containing narcotine that had been exposed to ultraviolet light; both groups of guinea-pigs died at the same time, but the group that had been fed on the solarized product showed no signs of scurvy while the other group was severely affected with it.

It was next found that methylnarcotine, derived from narcotine, could prevent or relieve scurvy. It was also found that narcotine was converted into an anti-scorbutic by submitting it to the action of germinating seeds.

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BOTANY

Flowers in Washington Bloom Ahead of Schedule

THE FLOWERS that bloom in the spring, *tra la*, have been popping all over the place in Washington this winter. For all its reputation as a semi-Southern city, the national capital normally gets its share of stiffish winter weather; so that it is a bit of an experience for Washingtonians to find things like pansies and pinks in their front yards all winter long.

Prof. J. B. S. Norton, University of Maryland botanist, has compiled a list of over fifty plants seen in blossom in the District of Columbia since the beginning of December. Some of them represent persistent survivors of the sum-

mer and autumn of 1931, others are precocious comers heralding the spring of 1932.

Among the cultivated ornamentals, Prof. Norton's list includes pinks, chrysanthemums, zinnias, verbenas, pansies, sweet alyssum, candytuft, phlox, crocuses, hyacinths, paper-white narcissi and irises. The latter are especially noteworthy, for they are not the dwarf irises that appear normally in March or perhaps even late February, but the tall *germanica* types, that normally wait until late April or May.

Trees and shrubs seen in bloom are elm, hazelnut, honeysuckle, roses, Forsythia and soft maple. Prof. Norton has kept records on soft maple, as the earliest of all spring blossomers, and has never seen it as early as he has this year.

Among wildflowers, wild asters persisted well into December, and violets have been in bloom all winter through. Early comers have been bluets and hepaticas.

Nor have the weeds been behind-hand. Dandelions have been as persistent as the violets in the woods and the pansies on the lawns; and other enemies on the list are peppercress, shepherd's-purse, field daisy and chickweed.

Science News Letter, February 20, 1932

ENGINEERING

Traffic Signals On Auto Dashboard Predicted

TRAFFIC LIGHTS will come down from their pedestals at street corners and make a place for themselves on the dashboards of the very automobiles they direct. This prediction of a future application of the vacuum tube was made by O. H. Caldwell, technical editor.

Modern railroad systems already have a similar system for reproducing signals in the engineer's cab, Mr. Caldwell pointed out.

"For autos, this will be accomplished by laying a high-frequency cable alongside the curb," he explained. "As long as this cable from traffic headquarters is energized, a detector tube on the car will keep the green lamp lighted on the dash—indicating 'go ahead.' When cross traffic is to pass, the cable would be switched 'off,' all car relays would drop open and all signals in cars would immediately change from green to red for 'stop.' Meanwhile, cables on the cross streets would be switched 'on,' and cars on those streets given the green 'go' signal."

Science News Letter, February 20, 1932

IN SCIENCE

PSYCHOLOGY

Parents Take Children's Misbehavior Too Seriously

PARENTS believe the faults of children to be much more serious than mental hygienists regard them, Ralph M. Stogdill found in an experiment conducted under the direction of Dr. Henry H. Goddard, of Ohio State University.

On a list of children's faults, parents rated only ten items as of little consequence, 33 as undesirable, 25 as serious, and two as very serious. On the other hand, mental hygienists rating the same list regarded two of the items as of no consequence at all, 19 as of little importance, 35 as undesirable, 14 as serious, and none as very serious.

Parents also differ from the mental hygienists on what is undesirable, Mr. Stogdill says.

Here are some of the faults on which parents and mental hygienists differ most. Rated serious by parents, less serious by the professional men were: Swearing, disrespect, smoking, masturbation, impertinence, disobedience. Rated serious by mental hygienists, less serious by parents: Excessive modesty, suspiciousness, bashfulness, lack of sociability, whining, fears, daydreaming, depression.

Science News Letter, February 20, 1932

ENGINEERING

Light Floods Monument For Celebration

See Front Cover

SCIENCE and engineering are aiding the Washington Bicentennial celebration, for they have joined hands to illuminate in a very realistic fashion the famous obelisk which is named for the father of his country. (SCIENCE NEWS LETTER, November 7, 1931, page 297.)

The striking photograph of the shaft and its reflection in the Lincoln Memorial pool shows how well the job has been done. By the combined use of floodlights and searchlights the angular outline of the monument has been preserved, even under the glare of intense artificial illumination.

Science News Letter, February 20, 1932

ICE FIELDS

BACTERIOLOGY

Silver Filter Gives Water Power to Kill Bacteria

A NEW TYPE of filter, with interstices covered with silver, has been tested at the Pasteur Institute of Paris by Dr. Nicolas Metalnikov, and found to confer upon the filtered water the power to destroy living bacteria.

The filter is made by adding chloride of silver to the moulding clay and baking at a high temperature of 2200 degrees Fahrenheit.

According to its inventor, Georges Lakhovsky, the water which passes through the filter does not contain any silver and is perfectly harmless; yet it retains for several days the power to destroy resistant bacteria like the common *Bacillus coli* and *Bacillus typhosus*, which causes typhoid fever.

The bactericidal power of the water that has passed through the silvered filter is claimed to be entirely due to the ionization of the water, and it disappears if the water is boiled for a few minutes. During its passage through the filter the water becomes slightly alkaline.

Science News Letter, February 20, 1932

ARCHAEOLOGY

Ivory Harpoon Points Show Grooves on Sides

HARPOON POINTS of fossil ivory, bearing the same curious grooves down their sides that characterized similar Eskimo weapons in slate received some time ago from Alaska, have just been added to the anthropological collection at the U. S. National Museum. Several hundreds of the weapons have been received by Dr. Ales Hrdlicka, curator of anthropology. They show all gradations in shape, from deep fluting down both sides, through a flat form to a double convex section. Some of them are convex on one side and fluted on the other.

The collection of points comes from St. Lawrence Island in the Bering Sea, a stepping stone in the migrations from Asia to America. The same location has already yielded rich returns in the relics of these ancient tribes, who pos-

sessed an art and a craftsmanship definitely superior to those of the present-day Eskimo.

Dr. Hrdlicka has also received a second smaller collection of implements in stone, from Kodiak Island. The outstanding things in this are five slate harpoon points, which show a perfect gradation from the double-grooved pattern to the double-ridged. These were collected by a man with no professional experience in archaeology, yet they form as complete a series as though they had been selected with that purpose in view.

Science News Letter, February 20, 1932

BOTANY

Oldest Oaks in Europe Menaced by Beech Saplings

WHAT is possibly the oldest oak forest in Europe, containing specimens believed to be over eight centuries old, has its very existence menaced by a crowding host of upstart beech saplings. The soil is favorable for them and they grow apace—and not a single young oak tree is in sight, to replace the giants when they fall.

This bit of menaced woodland stands in Oldenburg, in North Germany. It is only about 120 acres in extent, and is unique among western European woodlands in that the ground has been continuously in forest since at least the Middle Ages. It probably has never been anything else. Due to the medieval practice of feeding swine in the woods, the stand was for hundreds of years kept fairly open, and trees developed trunks twenty feet in circumference, with vast spreading crowns. Ferns and holly bushes flourished in their shelter.

The only other known area of virgin timber in western Europe is in Czechoslovakia, on the Bavarian-Bohemian frontier mountain range. Originally the property of Prince Schwarzenberg, it is now held and protected by the Czechoslovakian government. It once had an area of about 3300 acres, but in 1891 was reduced to a mere fragment of some 110 acres. Unlike the Oldenburg forest, this mountain woodland is principally in evergreens—firs and spruces—together with beech. Some of the trees are of extraordinary height for their species, their tops reaching up 150 feet or more. Since the policy of "let nature alone" has been followed here, much of the wood is choked with the trunks of great trees that have been blown down.

These two bits of woodland serve to give North Europeans some idea of the kind of world their ancestors lived in.

Science News Letter, February 20, 1932

RADIO

Radio Interference From Power Lines Overcome

RADIO LISTENERS near high-voltage power lines should enjoy clearer reception as the result of researches of Prof. F. O. McMillan of Oregon State College, who has proved that the leakage of current across insulators is a source of troublesome noise in nearby receiving sets and has found ways of overcoming this nuisance.

These leaking currents set up oscillations of radio frequency, Prof. McMillan explained in a report to the American Institute of Electrical Engineers. In tests which he conducted in a darkened room, every time a leakage from a high voltage line was observed, noise occurred in a radio set. The noise was often heard before the leakage became visible.

The leakage, and hence the interference, can be done away with, it was pointed out, by designing the insulators so that air near their surfaces is not overstressed electrically. The stresses might also be equalized by properly coating portions of the insulator with a conducting material, Prof. McMillan said.

Science News Letter, February 20, 1932

METEOROLOGY

Lightning Flash Adds Fertility to the Earth

EVERY TIME lightning flashes fertilizer is being added to the earth, Dr. W. J. Humphreys of the U. S. Weather Bureau has computed.

Ozone of the lower atmosphere, ammonia, and oxides of nitrogen are produced by the electrical discharge of the thunderbolt in the atmosphere, Dr. Humphreys explained. All of these synthetic chemicals made by lightning react with water in the air. The ammonia dissolves in rain, becomes ammonium hydroxide, and serves as plant food. The nitrogen oxides react with atmospheric water to form nitric and nitrous acids carried to earth to form soluble nitrates and nitrites which are good fertilizers.

Over 770 million tons of 100 per cent. nitrogen fertilizers are thus delivered to the soil each year, at the average of 12 pounds per acre a year. It is thus believed that regions where lightning is frequent and heavy may be more fertile because of this free gift of lightning-made nitrogen compounds.

Science News Letter, February 20, 1932

PHYSICS

Magnetism From the Electric Current

"A Classic of Science"

**This Experiment Led Faraday and Henry to Reverse It
And Get an Electric Current From a Magnetic Circuit**

EXPERIMENTS ON THE EFFECT OF A CURRENT OF ELECTRICITY ON THE MAGNETIC NEEDLE. By John Christian Oersted. Translated from a printed account drawn up in Latin by the author, and transmitted by him to the Editor of the Annals of Philosophy. Published in Annals of Philosophy, Vol. XVI., No. IV. Oct. 1820.

THE FIRST experiments respecting the subject which I mean at present to explain, were made by me last winter, while lecturing on electricity, galvanism, and magnetism, in the University. It seemed demonstrated by these experiments that the magnetic needle was moved from its position by the galvanic apparatus, but that the galvanic circle must be complete, and not open, which last method was tried in vain some years ago by very celebrated philosophers. But as these experiments were made with a feeble apparatus, and were not, therefore, sufficiently conclusive, considering the importance of the subject, I associated myself with my friend Esmarck to repeat and extend them by means of a very powerful galvanic battery, provided by us in common. Mr. Wleugel, a Knight of the Order of Danneborg, and at the head of the Pilots, was present at, and assisted in, the experiments. There were present likewise Mr. Hauch, a man very well skilled in the Natural Sciences, Mr. Reinhardt, Professor of Natural History, Mr. Jacobsen, Professor of Medicine, and that very skilful chemist, Mr. Zeise, Doctor of Philosophy. I had often made experiments by myself; but every fact which I had observed was repeated in the presence of these gentlemen.

The galvanic apparatus which we employed consists of 20 copper troughs, the length and height of each of which was 12 inches; but the breadth scarcely exceeded $2\frac{1}{2}$ inches. Every trough is supplied with two plates of copper, so bent that they could carry a copper rod, which supports the zinc plate in the water of the next trough. The water of the troughs contained $1/60$ th of its

weight of sulphuric acid, and an equal quantity of nitric acid. The portion of each zinc plate sunk in the water is a square whose side is about 10 inches in length. A smaller apparatus will answer provided it be strong enough to heat a metallic wire red hot.

The opposite ends of the galvanic battery were joined by a metallic wire, which for shortness sake, we shall call the *uniting conductor*, or the *uniting wire*. To the effect which takes place in this conductor and in the surrounding space, we shall give the name of the *conflict of electricity*.

Will Go Westward . . .

Let the straight part of this wire be placed horizontally above the magnetic needle, properly suspended, and parallel to it. If necessary, the uniting wire is bent so as to assume a proper position for the experiment. Things being in this state, the needle will be moved, and the end of it next the negative side of the battery will go westward.

If the distance of the uniting wire does not exceed three-quarters of an inch from the needle, the declination of the needle makes an angle of about 45° . If the distance is increased, the angle diminishes proportionally. The declination likewise varies with the power of the battery.

The uniting wire may change its place, either towards the east or west, provided it continues parallel to the needle, without any other change of the effect than in respect to its quantity. Hence the effect cannot be ascribed to attraction; for the same pole of the magnetic needle, which approaches the uniting wire, while placed on its east side, ought to recede from it when on the west side, if these declinations depended on attractions and repulsions. The uniting conductor may consist of several wires, or metallic ribbons, connected together. The nature of the metal does not alter the effect, but merely the quantity. Wires of platinum, gold, silver, brass, iron, ribbons of lead and tin, a mass of mer-

cury, were employed with equal success. The conductor does not lose its effect, though interrupted by water, unless the interruption amounts to several inches in length.

The effect of the uniting wire passes to the needle through glass, metals, wood, water, resin, stoneware, stones; for it is not taken away by interposing plates of glass, metal or wood. Even glass, metal and wood, interposed at once, do not destroy, and indeed scarcely diminish the effect. The disc of the electrophorus, plates of porphyry, a stone-ware vessel, even filled with water, were interposed with the same result. We found the effects unchanged when the needle was included in a brass box filled with water. It is needless to observe that the transmission of effects through all these matters has never before been observed in electricity and galvanism. The effects, therefore, which take place in the conflict of electricity are very different from the effects of either of the electricities.

If the uniting wire be placed in a horizontal plane under the magnetic needle, all the effects are the same as when it is above the needle, only they are in an opposite direction; for the pole of the magnetic needle next the negative end of the battery declines to the east.

That these facts may be the more easily retained, we may use this formula—the pole *above* which the *negative* electricity enters is turned to the *west*; *under* which, to the *east*.

If the uniting wire is so turned in a horizontal plane as to form a gradually increasing angle with the magnetic meridian, the declination of the needle *increases*, if the motion of the wire is

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OERSTED

—discovering the magnetic effect of the electric current. From a tablet in the Museum of Science and Industry at Chicago. This tablet and a duplicate in Copenhagen were erected to commemorate the hundredth anniversary of Oersted's achievement.

towards the place of the disturbed needle; but it *diminishes* if the wire moves further from that place.

When the uniting wire is situated in the same horizontal plane in which the needle moves by means of the counterpoise, and parallel to it, no declination is produced either to the east or west; but an *inclination* takes place, so that the pole, next which the negative electricity enters the wire, is *depressed* when the wire is situated on the *west* side, and *elevated* when situated on the *east* side.

If the uniting wire be placed perpendicularly to the plane of the magnetic meridian, whether above or below it, the needle remains at rest, unless it be very near the pole; in that case the pole is *elevated* when the entrance is from the *west* side of the wire, and *depressed*, when from the *east* side.

When the uniting wire is placed perpendicularly opposite to the pole of the magnetic needle, and the upper extremity of the wire receives the negative electricity, the pole is moved towards the east; but when the wire is opposite to a point between the pole and the middle of the needle, the pole is most towards the west. When the upper end of the wire receives positive electricity, the phenomena are reversed.

If the uniting wire is bent so as to form two legs parallel to each other, it repels or attracts the magnetic poles according to the different conditions of the case. Suppose the wire placed op-

posite to either pole of the needle, so that the plane of the parallel legs is perpendicular to the magnetic meridian, and let the eastern leg be united with the negative end, the western leg with the positive end of the battery: in that case the nearest pole will be repelled either to the east or west, according to the position of the plane of the legs. The eastmost leg being united with the positive, and the westmost with the negative side of the battery, the nearest pole will be attracted. When the plane of the legs is placed perpendicular to the place between the pole and the middle of the needle, the same effects recur, but reversed.

A brass needle, suspended like a magnetic needle, is not moved by the effect of the uniting wire. Likewise needles of glass and of gum lac remain unacted on.

We may now make a few observations towards explaining these phenomena.

The electric conflict acts only on the magnetic particles of matter. All non-magnetic bodies appear penetrable by the electric conflict, while magnetic bodies, or rather their magnetic particles, resist the passage of this conflict. Hence they can be moved by the impetus of the contending powers.

It is sufficiently evident from the preceding facts that the electric conflict is not confined to the conductor, but dispersed pretty widely in the circumjacent space.

From the preceding facts we may likewise collect that this conflict performs circles; for without this condition, it seems impossible that the one part of the uniting wire, when placed below the magnetic pole, should drive it towards the east, and when placed above it towards the west; for it is the nature of a circle that the motions in opposite parts should have an opposite direction. Besides, a motion in circles, joined with a progressive motion, according to the length of the conductor, ought to form a conchoidal or spiral line; but this, unless I am mistaken, contributes nothing to explain the phenomena hitherto observed.

All the effects on the north pole above mentioned are easily understood by supposing that negative electricity moves in a spiral line bent towards the right, and propels the north pole, but does not act on the south pole. The effects on the south pole are explained in a similar manner if we ascribe to positive electricity a contrary motion and power of acting on the south pole, but not upon the north. The agreement



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of this law with nature will be better seen by a repetition of the experiments than by a long explanation. The mode of judging of the experiments will be much facilitated if the course of the electricities in the uniting wire be pointed out by marks or figures.

I shall merely add to the above that I have demonstrated in a book published five years ago that heat and light

consist of the conflict of the electricities. From the observations now stated, we may conclude that a circular motion likewise occurs in these effects. This I think will contribute very much to illustrate the phenomena to which the application of polarization of light has been given. John Christian Oersted, Copenhagen, July 21, 1820.

Science News Letter, February 20, 1932

CERAMICS

Treatment with Heat Affects Quality of Optical Glass

THE DIFFERENCE between valuable optical glass of the kind used for submarine periscopes or expensive binoculars and inferior glass is just a matter of a few degrees of temperature, it appears from a report of Dr. A. Q. Tool and L. W. Tilton, of the U. S. Bureau of Standards, made before the American Ceramic Society at its annual meeting in Washington.

These scientists have found that very exact control of temperature during the

annealing process has much more to do with the quality of glass than has been previously thought. They have shown that an inferior piece of optical glass may possibly be reclaimed by reannealing, or tempering with heat, at exactly the proper temperature.

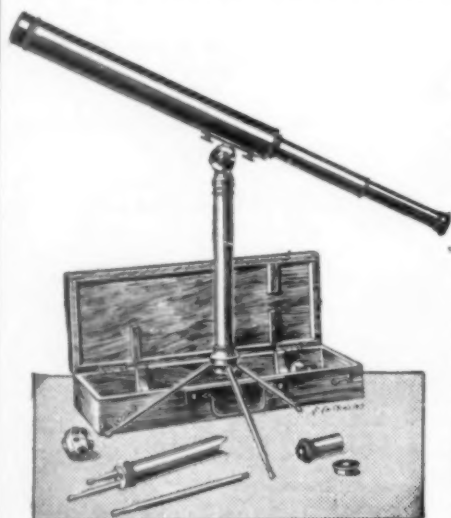
When glass is annealed it is heated to a high temperature and allowed to cool as rapidly as is possible without causing cracks or strains. The difference between the highest and lowest temperatures which optical glass experiences in the annealing process is about 50 degrees, the investigators reported. Glass heated to a temperature at one end of this range has properties differing from those of the glass heated to a temperature at the opposite end, and consequently must serve a different purpose.

How much the property of refraction, or deviating light rays, of a piece of glass changes with a rise or fall in the annealing temperature has been determined by these scientists for six or seven kinds of glass. This information will enable a glass manufacturer to learn at what temperature to reanneal in order to improve inferior glass.

That glass itself is not a super-cooled liquid, as is generally accepted, was advanced during the meeting in a paper prepared by E. Berger, of Jena, Germany. At the ordinary annealing temperature, Mr. Berger said, glass becomes a brittle solid corresponding to a fourth state of matter. This change is analogous to that which takes place when a liquid changes to a crystalline solid: the properties are altered and heat is evolved. This revolutionary viewpoint of the constitution of glass was given impetus by the work which was carried out at the U. S. Bureau of Standards by Dr. Tool.

Science News Letter, February 20, 1932

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ARCHAEOLOGY

Ruins at Ur Yield Burials Of Persons Decked in Jewels

GRAVES in ancient Ur of the Chaldees have yielded a new surprise—the burials of eighteen men, women, and children decked in all their jeweled finery as they were interred 4,700 years ago.

The burials were in a pit hidden under an unbroken mud floor, says the report just received from C. Leonard Woolley, field director of the joint expedition of the University of Pennsylvania Museum and the British Museum now digging at the ruins of Ur. The discovery is pronounced the most important since the finding of the royal tombs of Ur a few years ago.

The most important person to be buried in the place was a man, judging by the richness of his funeral trappings. Describing this man, Mr. Woolley says that a gold ribbon was twisted in his hair, and three oval ornaments of thin gold were over his forehead. Two long locks of hair hung over his chest and at the end of these were coiled hair-rings. Around his neck were necklaces of gold and carnelian beads and fine agates. His arms were hung with bracelets of gold, silver, and copper. His copper axe and dagger lay with him.

At the foot of this man's coffin was placed a model boat five feet long, made of bitumen. By it was a table of reed-stems, smoothly plastered with clay. The table collapsed long ago, and two pottery vessels which stood on it fell broken beneath it.

"These graves are totally unlike anything else we have found at Ur," declares Mr. Woolley.

The eighteen burials contain too little evidence of pomp and ceremony to be royal graves. Yet it is only at royal tombs that group burials have heretofore been found in Ur. In the royal tombs, a retinue of attendants were killed and buried with the departed royalty. In the new group of graves, each person was independently buried in a succession of funeral rites. It is a complete mystery, says Mr. Woolley.

Less spectacular, but perhaps equally important in tracing the history of ancient Ur, is the finding of a circular seal inscribed in writing such as was used in the Indus Valley. This seal, dating from 2800 B. C., shows that by that time the civilization of distant India had spread its influence to Mesopotamia.

Science News Letter, February 20, 1932

PHYSICS

Watching for Earthquakes Latest Task of Electric Eye

TO THE "electric eye" has been assigned the new task of watching for earthquakes. At the Canisius College Seismic Observatory in Buffalo, N. Y., Rev. John P. Delaney, professor of physics, has attached a photo-cell to the recording mechanism of his Galitzin seismograph. The function of the cell is to keep continual watch on the galvanometer light beam, and to send a warning signal to the observatory office whenever the light beam moves under the influence of an earthquake that is being recorded.

Ordinarily the seismologist discovers his earthquakes only after the development of the seismograph record. The

record is usually brought from the underground instrument vault only once in twenty-four hours, a fact which explains the paradox that even serious quakes often escape the notice of the vigilant seismologist for many hours, and even a day, after their occurrence. The new photo-cell attachment brings to the seismologist the assurance of immediate warning whenever a serious quake is recorded.

The same photo-cell attachment could serve advantageously in earthquake regions to set in motion any number of auxiliary instruments, such as accelerometers, and also to set in motion any available safety devices or alarm signals.

Science News Letter, February 20, 1932

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PHYSICS

Electromagnetic Test Proves Double Weight Hydrogen

NEWLY discovered hydrogen atoms are really twice as heavy as those of ordinary hydrogen. Direct electromagnetic weighing of the new double-weight atoms carried out by Dr. Walker Bleakney in his mass-spectrograph at the Palmer Physical Laboratory of Princeton University, confirm the recent discovery of the new isotope at Columbia University and establish its atomic weight as two.

Same Tube Used

Dr. Bleakney, for these experiments, borrowed the tube of hydrogen specially concentrated by Dr. F. G. Brickwedde in the low temperature laboratory of the U. S. Bureau of Standards, in which the heavy new isotope was actually discovered by Prof. Harold C. Urey and Dr. G. M. Murphy by analysis in their spectroscope at Columbia.

The mass-spectrograph, which weighs

individual atoms, chief instrument used in the discovery of chemical isotopes, had not been used before to test for the double-weight hydrogen isotope because scientists believed that the compound of hydrogen atomic weight two with an ordinary hydrogen atom of atomic weight one could not be distinguished from the triple ion consisting of three ordinary hydrogen atoms, each having atomic weight one. Changes in the pressure of the hydrogen, however, Dr. Bleakney deduced, should distinguish between these two kinds of triple-weight particles. His experiments confirming this prediction, the existence of the new double-weight isotope was again established.

One atom of double-weight hydrogen to every 1,100 ordinary atoms was found in this concentrated sample, or one part in 550 by weight, as estimated roughly by Prof. Urey.

Simultaneously a new and more precise two-ton mass-spectrograph to weigh the new hydrogen isotope more accurately has just been completed by Dr. Kenneth T. Bainbridge at the Bartol Research Foundation of the Franklin Institute in Swarthmore, Pa. With this apparatus Dr. Bainbridge hopes to find the slight difference in weight between the new double hydrogen atom and the ordinary hydrogen molecule consisting of two single-weight hydrogen atoms. From this measurement scientists will calculate the "packing fraction" for the new isotope which will give important information about the constitution of all atom cores.

Science News Letter, February 20, 1932

MEDICINE

X-Rays Detect Lead Poisoning in Children

A NEW method of diagnosing lead poisoning by means of X-rays has been reported to the American Medical Association by Dr. Edward C. Vogt of the Infant's Hospital and the Children's Hospital at Boston. When lead is absorbed into the body it is stored in the bones and can be detected in the X-ray pictures as a dense band at the growing margin, Dr. Vogt stated. Its elimination following treatment can also be observed by means of X-ray pictures.

Dr. Vogt pointed out that lead poisoning is a frequent and serious condition in children and one not always easy to diagnose. The dark line, called the lead line, at the margins of the gums is significant of the disease in adults but is seldom seen in small children, and the other diagnostic tests require considerable technical skill.

"The most frequent source of lead affecting the health of infants and children is from paint off the furniture, woodwork and toys," said Dr. Vogt. "As everyone knows, infants have a common tendency during the teething period to chew at anything they can get into their mouths."

When sufficient lead paint has been eaten in this way, symptoms of lead poisoning develop. This happens most often between the ages of one and two years.

The X-ray test for lead-poisoning cannot be used alone, Dr. Vogt pointed out, as some other conditions give the same or nearly the same picture, but together with other evidence, such as a history of chewing painted toys, it is very useful.

Science News Letter, February 20, 1932

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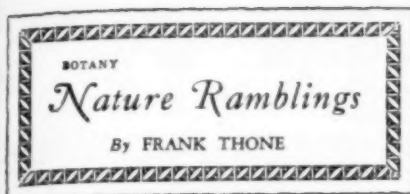
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This new catalog lists more than 6,000 lantern slides on science subjects. The listings are conveniently classified in such groups as: Lower Plant Forms, Roots, Stems, etc., in the Botany group; Physical Properties of Matter and Energy, Mechanics, Heat and Meteorological Physics, etc., in the Physics group; Atomic Structure, Oxygen, Sugar, etc., in the Chemistry group, and similarly for other sciences.

The reproduction above is one of the two hundred illustrations shown in our catalogue. Send for a copy today.



Trailing Arbutus

"MY LOVE'S an arbutus," sang one of the most melodious of modern Irish bards; but when he went on to refer to his lady in terms of an arbutus tree, American audiences were rather puzzled. For all the arbutus we know here is the beautifully flowered trailing shrub that makes the hillsides of the East scenes of odorous beauty in the spring.

The point is, of course, that there is a tree arbutus in Ireland though there is none here: a handsome, evergreen-leaved small tree that grows in the undergrowth in Irish woods as the holly and shadbush grow in America. Imagine a hawthorn tree decked out in the leaves and flowers of our trailing arbutus, and you will have a notion of the scented picture that was in the poet's mind when he sat down to write a song about his lady.

At that, though, it is to be doubted whether Americans would give up their trailing arbutus for a flowering tree. We have flowering trees in our spring woods that not even the fairy-haunted forests of Ireland can outmatch, and the trailing arbutus is doing a "power of good" right where it is. It grows on the thinnest, poorest, sourest soil that weathers out of granite hillsides, and transmutes the hardships to which it is born into beauty of form and color, into a breathing fragrance, that many of us think are quite unmatched by any other flower.

Too great a beauty—too rare a fragrance! For callous and barbarous hands have dragged the arbutus to market, and exposed it, bound like a girl on the slave block. And thoughtless purchasers declare happily that they "can smell all the spring in the country in this one little bunch." Perhaps—but stripped places on the hillsides grow larger each year.

Science News Letter, February 20, 1932

PHYSICS

Sensitive Electric Eye Counts Light Quanta

AN "ELECTRIC EYE" so sensitive that it can detect the ultraviolet rays from a lighted match at a distance of 30 feet has been developed by Gordon L. Locher of the Rice Institute.

This ultraviolet light detector, which will find many scientific uses, actually counts the individual electrons liberated by effect of light on the surface of a photoelectric metal. It is similar to the cosmic ray counters that have been demonstrated to several scientific audiences throughout the country. Like them it is hitched up to an amplifier and loud speaker so that the liberation of each electron can be heard as a click.

With this arrangement a candle at a distance of three or four feet produces a steady roar in the speaker.

Preliminary tests of the so-called "mitogenetic" rays have been made with this apparatus. These very faint ultraviolet rays, believed to be given out by rapidly dividing cells, for instance in growing root tips and in yeast cultures, were not detected by the new quantum counter though the apparatus was arranged for highest sensitivity.

The apparatus may be called a "quantum counter" since the setting free of each electron requires exactly one quantum or energy-atom of the incoming light. In the usual photoelectric cell it requires very many quanta of light to produce a measurable effect on the instrument.

Science News Letter, February 20, 1932

ENGINEERING

Huge Steel Drydock Towed Half Away Around World

A HUGE steel box, 584 feet long and 117 feet wide, has reached Wellington, New Zealand, after a five and one-half months voyage more than half the distance around the world.

It is a 17,000-ton floating drydock. Its journey of 13,500 miles from shipyards on the River Tyne in England to this city is called the longest tow on record by *The Engineer*.

Two tugs chaperoned the dock. They averaged 100 nautical miles a day until Java was reached, but over the remainder of the voyage adverse currents and gales retarded progress.

Science News Letter, February 20, 1932

Principles of Patent Law

for the chemical and metallurgical industries

By
A. W. Deller
Counsellor at Law
Patent Attorney
Chemical Engineer

483
Pages

Prepared as a practical working basis
for the chemist and metallurgist to use
in handling patent matters.

IN this book the author has filled a long felt need for an informative and authoritative work on patent law for those associated with the chemical and metallurgical industries and to explain complex legal doctrines of patent law in terms understandable to the technical man.

Chemists, Metallurgists, Research Directors, Managers and Executives of Chemical and Metallurgical enterprises will find in this book a wealth of constructive and useful information and an abundance of detailed explanations of every phase of patent law, sufficient to meet their technical needs without being burdened with fine spun legal theories.

Dr. L. H. Baekeland in his foreword to the book says: "My own information about patent laws has been acquired slowly, after long years of experience, and at the cost of some expensive blunders. I might have avoided all this if I had been able to avail myself of a book like Dr. Deller's Principles of Patent Law for the Chemical and Metallurgical Industries."

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• First Glances at New Books

Art

GENERAL INDEX TO ILLUSTRATIONS—Jessie Croft Ellis—*F. W. Faxon*, Boston, 467 p., \$5. A good index to pictures is welcome on the library shelf, as any one who ever needs to hunt up illustrations knows well. This index with its "22,000 selected references in all fields exclusive of nature," is a very good collection indeed. It was compiled chiefly in an architectural library and runs heavily to references in magazines and books on architecture, the arts, travel, and history. It is rather weak in science and invention and technology. Perhaps those subjects like nature call for a separate volume.

Science News Letter, February 20, 1932

Geology

STREAM SCULPTURE ON THE ATLANTIC SLOPE—Douglas Johnson—*Columbia University Press*, 142 p., \$3.25. The Atlantic seaboard of the United States is a highly important part of the civilized world, and its rivers have played a mighty part in making it so. For this reason Prof. Johnson's clearly written, cleanly illustrated treatise will be of interest not only to his fellow-physiographers, but also to workers in fields as apparently remote as economics and history.

Science News Letter, February 20, 1932

Zoology

THE FLYING FOX (*Pteropus*) IN AUSTRALIA—F. N. Ratcliffe—*Government Printer, Melbourne*, 81 p. This study, published as Bulletin 53 of the Council for Scientific and Industrial Research of Australia, covers the classification and natural history of these fruit-eating bats, and gives an account of their activity as economic pests.

Science News Letter, February 20, 1932

Mathematical Physics

THE THEORY OF GROUPS AND QUANTUM MECHANICS—Hermann Weyl; trans. by H. P. Robertson—*Dutton*, 422 p., \$6. This book gives a full account of the structure of the mathematics used in modern quantum mechanics and of the quantum theory itself, written for the specialist in this field. Weyl, however, has the faculty of telling what he is doing in a mathematical discussion so that those who are curious can get a rough picture without actually grinding through the symbolism. Only the minimum of experimental facts necessary to the discussion

are introduced. This, explains the author, is not to be attributed to his "mathematical haughtiness." He expresses his "deep respect for the work of the experimenter and for his fight to wring significant facts from an inflexible Nature, who says so distinctly 'No' and so indistinctly 'Yes' to our theories."

Science News Letter, February 20, 1932

Psychology

ANGER IN YOUNG CHILDREN—Florence L. Goodenough—*University of Minnesota Press*, 278 p., \$2.50. Based on observation of 45 children of cultured homes. The immediate causes for angry outbursts and the underlying conditions leading to irascibility are analyzed and the various ways in which the child displays his temper are classified. Methods of handling such outbursts and their effectiveness are also recorded.

Science News Letter, February 20, 1932

Ethnology

ETHNOLOGY OF MELANESIA—Albert B. Lewis—*Field Museum*, 209 p., 64 pl. \$1.75. A general and popular account of the islands and their inhabitants. One intended purpose is that the publication serve as a guide for museum visitors studying the Melanesian exhibits in the Field Museum. The book is, however, complete in itself without reference to the exhibits and is very readable.

Science News Letter, February 20, 1932

Botany

A GUIDE TO THE SPRING FLOWERS OF MINNESOTA—C. O. Rosendahl and F. K. Butters—*University of Minnesota Press*, 89 p., \$1. An excellently executed key to the spring wildflowers of a state where spring is a truly beautiful season and a joy to the botanist. The authors have given competent thought to the matters of typography and illustration, which are more important than might be imagined in the successful "working" of a local flora. The economical yet adequate handling of the line drawings especially is something worthy of imitation by other botanists who may be preparing similar publications.

Science News Letter, February 20, 1932

Parasitology

UNINVITED GUESTS—David Causey—*Knopf*, 129 p., \$2. Characterized by the author as "a short account of the animals living on or in us," this popular presentation of the main facts of parasitology contrives to interest the reader so much that he forgets to feel "crawly." There are numerous (and occasionally humorous) little pen-and-ink sketches that help make the story clearer.

Science News Letter, February 20, 1932

Medicine and Law

A COMPENDIUM OF THE STATUTE LAW OF CORONERS AND MEDICAL EXAMINERS IN THE UNITED STATES—George H. Weinmann—*Bulletin No. 83 of the National Research Council*, 240 p., \$3. This is a comprehensive survey of the various state laws governing selection, qualification, tenure of office, powers, duties and compensation of coroners, deputy coroners and medical examiners. The bulletin is issued under the auspices of the committee on medicolegal problems of the National Research Council.

Science News Letter, February 20, 1932

Archaeology

MERCHANT VENTURERS IN BRONZE—Harold Peake and Herbert John Fleure—*Yale Univ. Press*, 168 p., \$2. The centuries from 1600 B. C. to 1200 B. C. were exciting and important ones in the history of civilization. The Hyksos descended on Egypt; Aryan hordes invaded India. Crete was at the height of its glory. The art of metallurgy was spread abroad. The archaeological story of this period fills the seventh small book in the scholarly series entitled "The Corridors of Time."

Science News Letter, February 20, 1932

Psychology

BEHIND THE SCENES WITH OURSELVES—Carl Ramus—*Century*, 443 p., \$3. This book is just what the author terms it—"hopelessly unorthodox." It is an independent, informal, free-lance study in which the author propounds his theory of a "superconscious." Entertainingly written.

Science News Letter, February 20, 1932

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